



Op 1631

PATENT
Attorney Docket No. P05413US4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Maranas, et al. Group Art Unit: 1631
SERIAL NO: 10/037,572 Examiner: C. Mahatan
FILED: November 9, 2001 Confirmation No: 6518
TITLE: A MODELING FRAME WORK FOR PREDICTING THE NUMBER, TYPE AND
DISTRIBUTION OF CROSSOVERS IN DIRECTED EVOLUTION EXPERIMENTS

INFORMATION DISCLOSURE STATEMENT
FILED WITHIN THREE MONTHS OF COMMUNICATION
FROM FOREIGN PATENT OFFICE

RECEIVED

DEC 02 2003

TECH CENTER 1600/2900

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Attached are Forms PTO/SB/08A and 08B (formerly Form PTO-1449) listing the relevant art known to the applicant herein. Copies of the references are enclosed, including the International Search Report from the related PCT application. The Examiner is requested to consider the references and make them of record.

Each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. § 1.97(g)), an admission that the

=====

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

MAILING

☒ deposited with the United States Postal Service with sufficient postage as First Class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

FACSIMILE

☐ transmitted by facsimile to the Patent and Trademark Office, Art Unit _____ at Fax No. (703) 872-_____.

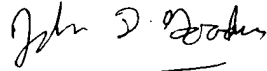
Date: Nov. 20, 2003

John D. Goodhue

information cited is, or is considered to be, material to patentability, or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner.

Respectfully submitted,



John D. Goodhue, Registration No. 47,603
McKEE, VOORHEES & SEASE, P.L.C.
801 Grand Avenue, Suite 3200
Des Moines, Iowa 50309-2721
Phone No. (515) 288-3667
Fax No. (515) 288-1338
CUSTOMER NO: 27407

- WRW -

Attorneys of Record



Substitute for form 1449A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Application Number	10/037,572
				Filing Date	November 9, 2001
				First Named Inventor	Maranas, et al.
				Art Unit	1631
				Examiner Name	C. Mahatan
Sheet	1	of	1	Attorney Docket Number	P05413US4

RECEIVED
DEC 02 2003
TECH CENTER 1600/2900

U.S. PATENT DOCUMENTS					
Examiner Initials *	Cite No. ¹	Document Number Number - Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS						
Examiner Initials *	Cite No. ¹	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		WO 98/18814	05/07/1998	Cumulative Inquiry, Inc.		
		WO 00/18906	04/06/2000	Maxygen, Inc.		
		WO 00/42559	07/20/2000	Maxygen, Inc.		
		WO 01/90346 A	11/29/2001	California Institute of Technology		

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

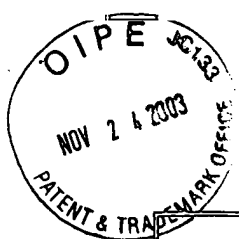
*EXAMINER: Initial if reference considered whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kinds of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

I:\Goodhue\IDS\IDS_Maranas P05413US4.doc



Substitute for form 1449B/PTO		Complete if Known	
		Application Number	10/037,572
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Filing Date	November 9, 2001
		First Named Inventor	Maranas, et al.
		Group Art Unit	1631
		Examiner Name	C. Mahatan
		Attorney Docket Number	P06413US4
Sheet	2	of	2

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	✓	H. CHEN, et al.: <i>Computer program for calculating the melting temperature of degenerated oligonucleotides used in PCR or hybridization</i> ; Biotechniques 1997 United States, V 22, No. 6, 1997; Pgs. 1158-1160	
	✓	JOHN SANTALUCIA, JR; <i>A unified view of polymer, dumbbell, and oligonucleotide DNA nearest-neighbor thermodynamics</i> ; Proceedings of the National Academy of Sciences of the United States; V 95-, No. 4; 02/17/98; Pgs. 1460-1465	
	✓	FENGZHU SUN; <i>Modeling DNA Shuffling</i> ; International Conference on Computational Molecular Biology. Recomb '98. New York, NY, 3/22-25/98, Proceedings of the Annual International Conference on Computational Molecular Biology, New York, NY, ACM, US; 03/22/98; Pgs. 251-257	
	✓	LEONARD D. BOGARAD, et al.; <i>A hierarchical approach to protein molecular evolution</i> ; Proceedings of the National Academy of Sciences of the United States; V 96, No. 6; 3/16/99; Pgs. 2591-2595,	
	✓	G. L. MOORE, et al.; <i>Modeling DNA mutation and recombination for directed evolution experiments</i> ; Journal of Theoretical Biology United Kingdom, V 203, No. 3; 08/07/00; Pgs. 483-503	
	✓	G. L. MOORE, et al.; <i>Predicting crossover generation in DNA shuffling</i> ; Proceedings of the National Academy of Sciences of the United States; V 98, No. 6; 3/13/01; Pgs. 3226—3231	
	✓	STEFAN LUTZ, et al.; <i>Creating multiple-crossover DNA libraries independent of sequence identity</i> ; Proceedings of the National Academy of Sciences of the United States; V 98, No. 20; 09/25/01; Pgs. 11248-11253	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

* EXAMINER: Initial if reference considered whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.